

1                   **METHOD AND APPARATUS FOR MIXING AND DISPENSING**  
2                                   **OIL AND GASOLINE IN A TANK**  
3  
4

5           Cross Reference to Related Applications

6                   This application claims the benefit of U.S. provisional application Serial No.  
7           60/394,203, filed July 5, 2002.  
8

9           Background of the Invention

10                   This invention concerns dispensing of gasoline-oil mixtures. Such dispensing is  
11           sometimes done from storage tanks moved to job sites such as for landscaping and construction  
12           crews to fuel two cycle powered equipment.

13                   Large tanks are filled with gasoline with an appropriate amount of oil added,  
14           necessary to lubricate two cycle engines.

15                   It is critical that the oil be thoroughly mixed with the gasoline to insure that the  
16           two cycle engines using the fuel will be properly lubricated.

17                   This is difficult when large tanks (i.e., containing fifty to several hundred gallons  
18           of fuel) are used to store the gasoline.

19                   It is the object of the present invention to provide a simple but very effective  
20           apparatus and method for mixing gasoline and oil in a large tank also used in dispensing the  
21           gasoline-oil mixture.  
22

23           Summary of the Invention

24                   The above object and others which will become apparent upon a reading of the

1 following specification and claims are achieved by a diversion of the dispensing flow induced by  
2 operation of the pump. The flow diversion is controlled by a selectively operated valve which  
3 connects the dispensing pump outlet to a fluid conduit extending downwardly into the tank,  
4 terminating in a jetting nozzle directing a strong jet flow into the gasoline-oil mixture preferably  
5 directed horizontally across the bottom of the tank. This jet flow creates a powerful stirring or  
6 mixing action, insuring a thorough mixing of the gasoline and oil within a few minutes.

7 The diverter valve is then closed to allow dispensing of the mixture via a  
8 dispensing nozzle also connected to the pump outlet. The dispensing nozzle has a shut off valve  
9 which is closed during the mixing operation.

#### 10 11 Description of the Drawings

12 Figure 1 is a diagram of a fuel storage tank with associated dispensing and mixing  
13 components.

14 Figure 2 is an enlarged detailed diagram of the mixing components included in the  
15 diagram of Figure 1.

#### 16 17 Detailed Description

18 In the following detailed description, certain specific terminology will be  
19 employed for the sake of clarity and a particular embodiment described in accordance with the  
20 requirements of 35 USC 112, but it is to be understood that the same is not intended to be  
21 limiting and should not be so construed inasmuch as the invention is capable of taking many  
22 forms and variations within the scope of the appended claims.

1 Referring to the drawings, Figure 1 depicts a fuel storage tank 10 of a size holding  
2 275 gallons, although the invention can be applied to tanks of varying capacities from 50-500 or  
3 more gallons. Gasoline and two cycle oil are introduced through a suitable capped filler opening  
4 12.

5 An electrically powered dispensing pump 14 is mounted on the tank 10, with a  
6 draw tube 16 extending into the tank interior connected to the pump inlet. An on-off switch (not  
7 shown) allows selective operation of the pump 14 for dispensing fuel in a known manner. The  
8 outlet of the pump 14 is connected via fluid line 15 to a tee 18 which in turn connects to a  
9 dispenser nozzle 20 via a flexible hose 22.

10 A trigger operated valve included in the dispenser nozzle 20 manually controls  
11 outflow of fuel when dispensing.

12 The tank 10 and pump 14 are normally grounded to avoid electrical arcs, and the  
13 hose 22 may have metal conductors embedded therein for the same purpose.

14 According to the present invention, the tee 18 allows diversion of liquid back into  
15 the tank 10 when the dispenser nozzle 20 valve is shut off via a connected down tube 24 which  
16 terminates in a smaller diameter tube 26 which directs a strong jet of liquid horizontally across  
17 the bottom region of the tank 10. This creates a powerful mixing action of the liquids in the tank  
18 10, which action can be completed in five minutes or so. A ball valve 28 allows the diverted  
19 flow to be shut off for normal dispensing of the now thoroughly mixed fuel.

20 Figure 2 shows further details in which a 3/4 inch rubber hose 30 connects the tee  
21 18 to a street elbow 32 received in a bushing 34 threaded into a bung hole in the tank 10. The  
22 down tube 24 is 3/4 inch black pipe extending to the vicinity of the bottom of the tank 10 where a

reducing elbow 36 connects to the horizontal 3/8 inch jetting pipe 26. A strong jet or spray results setting up recirculation and thoroughly mixing of the fuel in the tank 10.

The nozzle 20 is shut off at this time to prevent escape of fuel and complete diversion of fuel to the jetting pipe 26.

The valve 28 is then closed, and normal dispensing of the thoroughly mixed fuel via nozzle 20 can then proceed.